



**ABOVE** • Sir Mark Walport (c) drew a crowd to his talk on global health. See story on p. 12.

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# nih record

*To Stop a 'Self-Inflicted' Wound*

## Mikulski Visits NIH, Hears Impact of Sequestration

By Carla Garnett

**U**.S. Sen. Barbara Mikulski (D-MD), the senior senator from Maryland and chair of the Senate appropriations committee, came to NIH on Feb. 20 with one goal: stop sequestration, the federal government's automatic budget-cutting mechanism set to take effect on Mar. 1.

"We talk a lot about threats to the United States," said Mikulski. "We fear foreign predators and terrorism, we fear foreign competition, but we are about to [bring upon ourselves] a self-inflicted wound."



Mikulski's NIH tour was the second within a 2-week span by a member of Congress's senior chamber. Sen. Ben Cardin (D-MD) held a Town Hall meeting here on Feb. 8. The senators' visits were an effort to bring attention to the poten-

SEE **MIKULSKI**, PAGE 6

*Sen. Barbara Mikulski (r) speaks against damaging effects of sequester on NIH's patients and grantees.*

*Make Like a Tree and Breathe*

## Yoga for Seniors: Safe and Effective?

By Belle Waring

Millions of Americans practice some form of yoga.

But for seniors and other folks at increased risk for injury, how useful is yoga? How safe?

Now Dr. George Salem of the University of Southern California, in collaboration with his co-principal investigator Dr. Gail Green-dale at UCLA, is the first to quantify the bio-mechanical effects of yoga on healthy seniors. He recently visited NIH to discuss his Yoga Empowers Seniors Study (YESS) in Lipsett Amphitheater.



*Dr. George Salem*

"The primary objective in the YESS study," he said, "is to provide information for instructors

SEE **YOGA**, PAGE 8

*Profound Effects on Human Health*

## Microbiologist Studies How Animals, Microbes Have Coevolved

By Dana Steinberg

We tend to think of germs as the enemy, but some microbes are allies essential to our existence.

Trillions of microorganisms live on and in our bodies. Recent research reveals that many of them contribute to vital life functions from circulation and digestion to immune defenses.

"We know that humans have, throughout their evolutionary history, been influenced by interactions with microorganisms," said Dr. Margaret McFall-Ngai, professor of medical



*Dr. Margaret McFall-Ngai*

SEE **MICROBIOME**, PAGE 4



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*NIH...Turning Discovery Into Health*

## briefs

### **Penn State's Collins To Speak on Behavioral Interventions, Mar. 26 at Natcher Bldg.**

Dr. Linda Collins, director of the Methodology Center and professor, department of statistics and department of human development and family studies at Pennsylvania State University, will speak at NIH on Tuesday, Mar. 26 from 10 a.m. to noon in Bldg.



45, balcony B. Her talk, "Raising the Bar: Engineering Optimized Behavioral Interventions for Increased Public Health Impact," is part of the NIH Office of Disease Prevention's Medicine: Mind the Gap seminar series.

Collins will discuss why behavioral interventions are important in many areas of public health, for example, smoking cessation, drug abuse prevention, treatment of obesity, management of heart failure symptoms and promotion of physical activity. She will review an approach called multiphase optimization strategy (MOST), an engineering-inspired framework for developing, optimizing and evaluating behavioral interventions.

Since 1996, Collins has been director of a National Institute on Drug Abuse Center of Excellence, the Center for Prevention and Treatment Methodology. Her research also is funded by NCI and NIDDK.

The seminar is cosponsored by the National Institute on Alcohol Abuse and Alcoholism. Registration is not required; seating is on a first-come, first-served basis. Sign language interpreters will be provided. Those who require reasonable accommodation to participate should email [Paris.Watson@nih.gov](mailto:Paris.Watson@nih.gov) or call her at (301) 496-6615.

### **STEP Forum on Behavior Change, Apr. 4**

The staff training in extramural programs (STEP) committee will present a Science in the Public Health forum on the topic "Behavior Change: Why Is It So Hard?" on Thursday, Apr. 4, from 9 to 11 a.m. in Lister Hill Auditorium, Bldg. 38A.

Does someone you know have a bad habit you wish they would change? Do you? Bad habits are like a comfortable chair, easy to get into, but

hard to get out of. Why is it so difficult to change a behavior and adopt healthier habits? Come and learn the conditions, characteristics and mechanisms to bring about and maintain change.

### **Symposium on Gluten Disorders Set, Mar. 22**

In honor of National Nutrition Month, the NIH Division of Nutrition Research Coordination is sponsoring a mini-symposium, "Gluten Disorders: Scientific, Dietary and Consumer Education Perspectives."

The meeting will be held in Masur Auditorium, Bldg. 10 on Friday, Mar. 22 from 8:30 a.m. to 12:45 p.m. It will feature oral presentations and a panel discussion. Topics include historical analyses of wheat gluten content, epidemiological and clinical perspectives on the diagnosis and management of gluten disorders, the status of FDA's gluten-free food labeling rulemaking and challenges/opportunities for managing a gluten-free diet.

See the agenda at <http://dnrc.nih.gov/glutenDisorders.asp>. Online pre-registration is required (<http://citfm.cit.nih.gov/dnrc/dnrcregistration.php>). Questions about the program may be directed to [DNRC@nih.hhs.gov](mailto:DNRC@nih.hhs.gov).

### **Next Protocol Navigation Lecture, Apr. 1**

The IRP Protocol Navigation Training Program Seminar Series continues with a lecture to be held Monday, Apr. 1 from 2 to 3 p.m. in Lipsett Amphitheater, Bldg. 10. The program is a trans-NIH effort to develop resources and tools and to provide training for intramural staff and contractors involved in protocol development, writing, coordination and management. Dr. James Cimino of the Clinical Center will present "Meeting Data Access and Reporting Requirements with the NIH's Biomedical Translational Research Information System (BTRIS)." For more information, contact Beverly Barham, (301) 594-2494, [bbarham@mail.nih.gov](mailto:bbarham@mail.nih.gov) or Marcia Vital, (301) 451-9437, [vitalm@mail.nih.gov](mailto:vitalm@mail.nih.gov).

### **Cancer Immunotherapy Clinical Trials Workshop, Apr. 4-5**

The Society for Immunotherapy of Cancer is offering a 2-day workshop, Cancer Immunotherapy Clinical Trials: Concepts and Challenges, on Apr. 4-5 from 8 a.m. to 5 p.m. in Masur Auditorium, Bldg. 10. The workshop will outline current challenges posed by development of therapeutic trials in immunotherapy. Several issues will be examined: preclinical testing requirements for clinical development, innovative clinical trial design, appropriate patient selection, end-point determination and developing combination therapies to improve long-term disease management and survival. Accelerating anticancer agent development, validation and approvals will also be discussed. The program is free to government employees but registration is required. For more information, visit <http://www.sitcancer.org/sitc-meetings/cict13>.

# nih record



## Dienstag To Give Chanock Lecture, Mar. 26 in Bldg. 50

Dr. Jules L. Dienstag, dean for medical education and Carl W. Walter professor of medicine at Harvard Medical School, will deliver the 2013 Robert M. Chanock Memorial Lecture. His talk, "Hepatitis C: From Abstraction to Cure," will be held on Tuesday, Mar. 26 at 9 a.m. in the first floor conference room of Bldg. 50.



Dienstag was a research associate in NIAID's Laboratory of Infectious Diseases (LID) from 1974 to 1976 before joining Harvard in 1976. He has devoted his career to improving the understanding, prevention and management of viral hepatitis.

He participated in early studies to define the virology and epidemiology of hepatitis A and hepatitis C viruses. His studies on hepatitis B virus encompassed immunology, epidemiology and vaccine and therapeutic development, including clinical trials of lamivudine, the first direct-acting antiviral drug to be approved by the Food and Drug Administration for the treatment of chronic hepatitis B infection. Between 1998 and 2010, he was principal investigator at the Massachusetts General Hospital site for a national clinical trial of maintenance antiviral therapy for chronic hepatitis C in people who had not responded to standard treatment.

Dienstag will discuss the history of hepatitis C research and the promise of new treatments for the disease. Research during the 1960s and 1970s led to the identification of hepatitis A and B viruses, but another unidentified virus still accounted for a substantial proportion of hepatitis disease. For many years, this other virus was called "non-A, non-B hepatitis." Not until 1988 was hepatitis C virus identified and characterized. Today, antiviral therapy is effective against hepatitis C, successfully curing more than three-quarters of patients. According to Dienstag, the dozens of next-generation antivirals currently in clinical development may achieve even higher cure rates.

The lecture honors Chanock, who served as chief of LID for more than three decades. His work helped establish a legacy of excellence in virology research at NIAID; he trained a generation of leaders in virology and academic medicine.



Representatives from the Indian and U.S. governments, along with diabetes experts from both countries, met during the Indo-U.S. Workshop on Innovative Approaches and Technologies for Diabetes Prevention and Management. Panelists included (from l) Dr. Rajiv Sharma, executive director, Indo-U.S. Science and Technology Forum; Dharitri Panda, senior financial advisor, Indian Council of Medical Research; Dr. Bela Shah, head, ICMR division on non-communicable diseases; ICMR director general Dr. V.M. Katoch, secretary, department of health research; NIDDK director Dr. Griffin Rodgers; Dr. Judith Fradkin, director, NIDDK Division of Diabetes, Endocrinology and Metabolic Diseases; and Steven T. Smith, health attaché and regional representative for South Asia, HHS, U.S. Embassy, New Delhi.

PHOTO: INDIAN COUNCIL OF MEDICAL RESEARCH

## U.S., Indian Diabetes Experts Hold Workshop

On Feb. 4-6, NIDDK and the Indian Council of Medical Research (ICMR), part of the Indian Ministry of Health and Family Welfare, held a scientific workshop to identify opportunities for collaboration between the two countries in high-priority diabetes research areas of joint interest. The workshop convened in New Delhi, India, with leadership from NIDDK, ICMR and the Fogarty International Center, along with diabetes experts from across the U.S. and India.

NIDDK director Dr. Griffin Rodgers showed a map illustrating the diabetes burden in the United States and India —about 26 million and 62 million people, respectively—to demonstrate the importance of joint efforts between the two countries. "A picture is worth a thousand words, or in this case, millions," he told workshop participants. "India and the United States possess complementary scientific strengths and other resources that can be applied to the challenge of diabetes."

The meeting, titled "Indo-U.S. Workshop on Innovative Approaches and Technologies for Diabetes Prevention and Management," comes after HHS Secretary Kathleen Sebelius and India's Minister of Health and Family Welfare Ghulam Nabi Azad signed a joint statement to collaborate on diabetes research in June 2012.

"If common solutions [developed through this initiative] are affordable, they would also be applicable globally," said ICMR director general Dr. V.M. Katoch at the workshop.

Dr. Judith Fradkin, director of NIDDK's Division of Diabetes, Endocrinology and Metabolic Diseases, said the areas under study are ripe for collaborative efforts that could yield new understanding of diabetes in both populations. "Both countries have an interest in implementing findings through translational efforts—for example, technologies offer extraordinary promise to identify people with diabetes and to help them prevent complications," she said.

Ideas generated in the workshop will help inform a planned initiative for NIDDK and ICMR to fund collaborative teams of U.S. and Indian diabetes researchers. Specifics will be announced later this year.—Eleanor Hoff and Amy Reiter

## MICROBIOME

CONTINUED FROM PAGE 1

### Right:

"Our idea of relationships in the biological world is drastically changing on a yearly basis," said McFall-Ngai.

### Microbiome Resources:

View the webcast:

[www.youtube.com/nihvcast?v=zBAOX9XIWYo&dr=1](http://www.youtube.com/nihvcast?v=zBAOX9XIWYo&dr=1)

McFall-Ngai's lab web site:

<http://labs.medmicro.wisc.edu/mcfall-ngai/>

Human Microbiome Project:

<http://commonfund.nih.gov/hmp/>

microbiology and immunology at the University of Wisconsin. "Microorganisms seem to be impacting just about every aspect of our biology." For instance, she said, the products of microbial activities are absorbed from the intestine into the circulatory system and affect every cell serviced by blood.

Speaking at a recent Wednesday Afternoon Lecture in Masur Auditorium, sponsored by the Foundation for Advanced Education in the Sciences, McFall-Ngai marveled at how technology is changing how we view the whole biosphere. She said an advance in molecular technology and DNA sequencing "is enabling and revolutionizing how we see the biological world."

Introducing her, NIH director Dr. Francis Collins said, "She comes to us at a very interesting time because the amount of data that's possible to generate on the microbiome has been expanding drastically in the past few years with the advent of technologies and the Human Microbiome Project."

The NIH-sponsored project convened hundreds of scientists from dozens of research centers to examine hundreds of healthy human volunteers. Through DNA sequencing and genetic analysis, researchers identified and studied all of the microorganisms that habitually exist on and in our bodies.

Microbes have an impressive metabolic scope, said McFall-Ngai, who has spent decades studying host responses to interactions with beneficial microbes. A long-time expert on symbiosis, she and her collaborators have been analyzing the relationship between squid and bacteria.

### The Squid and the Vibrio: A Codependence Success Story

The research examines the tiny bobtail squid (*Euprymna scolopes*) and its gram-negative bacterial partner *Vibrio fischeri*. This symbiotic relationship helps us understand how two different species form a persistent relationship and coexist to survive.

That bioluminescent glow you might see in the ocean at night is light emitted by living organisms. The bioluminescent vibrio living in this species of squid produces the glow from the animal's light organ. Glowing helps the squid blend into its surroundings and eliminate its shadow against the moonlight to avoid detection by predators.



Symbiosis is a central tenet of animal biology. McFall-Ngai's work examines how the symbiont population, the *Vibrio fischeri*, subsists over its host squid's lifetime, so that the symbiont does not overgrow the host and the host does not eliminate it. This balancing act has prompted further investigation of the similarities and differences between pathogenic and beneficial animal-bacterial interactions.

Recent studies have demonstrated that beneficial and harmful microbes often use the same molecules to mediate their interactions on host-cell surfaces. McFall-Ngai gave one example of the high levels of toxic nitric oxide emitted by the squid, through which the vibrio must navigate to colonize their host.

The vibrio-squid model gives us insights into the larger world of microbial interactions with different species, how bacteria colonize humans and other animals and the role microbes play in our health.

"Our idea of relationships in the biological world is drastically changing on a yearly basis," said McFall-Ngai. She cited the three domains that comprise the biological world—eukarya, archaea, bacteria—but said due to the impact of horizontal gene transfer, there may not be a tree of life as we know it; additional groups and kingdoms could be possible.

McFall-Ngai underscored the importance of technology in advancing biological discovery. While some institutions have a more conservative approach, she expressed her hope that universities and NIH will take a forward-thinking trajectory to the bio-tech revolution. ●



# feedback

Want to know about some aspect of working at NIH? You can post anonymous queries at [www.nih.gov/nihrecord/index.htm](http://www.nih.gov/nihrecord/index.htm) (click on the Feedback icon) and we'll try to provide answers.

**Feedback:** Was there anything in the "Summit Calls for Accelerated Pace Towards Health Equity" [*NIH Record*, Feb. 1, 2013, p. 1] that included persons with disabilities or LGBT persons, or will it continue to solely focus on persons of color, as if health care disparities is the reality of all persons of color and only persons of color? Is the NIH involved with Health Disparities Research at the Intersection of Race, Ethnicity and Disability: A National Conference, Apr. 25 & 26, 2013, Washington, D.C.?

**Response from the National Institute on Minority Health and Health Disparities:** The 2012 Science of Eliminating Health Disparities Summit was a collaboration of several federal agencies involved in efforts to eliminate health disparities. The summit covered issues related to the health of various population groups based on race, gender, class, sexual orientation, disability status and other social classifications underlying the inequitable distribution of social and economic resources and opportunities.

Collaborators included the U.S. Department of Education's interagency committee on disability research and the HHS LGBT coordinating committee. Sessions were organized under 16 themes and three tracks, covering a range of topics including LGBT populations and persons with disabilities. Selected examples of the sessions addressing LGBT health and/or disability populations included:

C1-05—A New Methodology for Translating Evidence-Based Obesity Prevention Strategies for Youth and Young Adults with Disabilities from Diverse Race/Ethnic Backgrounds

B1-07—The State of the Science in Disability Research and Policy

B1-09—Improving Health of LGBT Population

C1-07—Reducing Health Disparities for Women Veterans: Engaging Diverse Disciplines in Science, Practice and Policy

D1-12—Examining Discrimination and Stereotyping along Multiple Axes

A2-22—Data Collection Standards for Race, Ethnicity, Sex, Primary Language and Disability Status

A1-15—Patient-Reported Outcomes Measurement Information System (PROMIS) and Health Disparities

More information on the summit and these sessions is available at [www.nimhd.nih.gov/summit\\_site/programAgenda.html](http://www.nimhd.nih.gov/summit_site/programAgenda.html).

And yes, NIMHD has been invited to present at the Health Disparities Research at the Intersection of Race, Ethnicity and Disability: A National Conference.

**Feedback:** What's the holdup on opening the Rockville Pike North Drive employee entrance and what is the new timetable? It's several weeks overdue already.

**Response from the Office of Research Services and the Office of Research Facilities:** This construction project is under the authority of the State Highway Administration (SHA), not NIH. SHA continued to push back the completion date and was unable to provide us with a specific date of completion until recently. As soon as the Office of Research Services and the Office of Research Facilities were aware North Drive was finally available for use by staff, we notified the NIH community and the entrance was reopened on Mar. 6. 📞

## NINDS's DeCoster Receives Thank-You Call from Sebelius

Tijuanna "Tia" DeCoster, NINDS chief grants management officer, recently had the surprise of a lifetime. She received a direct phone call from Department of Health and Human Services Secretary Kathleen Sebelius. "It was a very nice surprise," said DeCoster. "For someone at her level to recognize me is amazing. I am thankful that she took the time to call."



Sebelius called to thank DeCoster for being a dedicated federal employee and to recognize her achievements in creating an innovative, cost-recovery program to close out and collect undisbursed funds.

According to DeCoster, undisbursed funds are defined as the difference between the dollar amount obligated to individual grants and the amount that grantees report to the Payment Management System as being used. The pilot program—which was created in partnership with the Office of Financial Management and the NIH Closeout Center—allowed NINDS to collect the undisbursed funds and return them to NIH, and ultimately to the U.S. Department of Treasury.

The call is part of a larger HHS effort to acknowledge the exceptional work of employees.

Sebelius also thanked DeCoster for the quick and efficient way in which she and the NINDS Grants Management Branch revised numerous grant awards in FY 2011 (when NIH was under a continuing resolution and had no budget). Under the continuing resolution, NIH had to fund grants at a reduced amount. Once NIH received a budget, DeCoster and her staff had to rapidly revise NINDS grants to reflect the appropriate changes.

"After the conversation [with Sebelius] was over, I informed my staff and thanked them for their hard work," said DeCoster. "Although I have the vision for the office, without my staff there would be no implementation. They did the work, so 'kudos' to the NINDS GMB staff." —Shannon E. Garnett



## MIKULSKI

CONTINUED FROM PAGE 1

### **Above, from 1:**

Mikulski (c) visits NINDS's Dr. Daniel Reich (r) and NIA's Dr. Susan Resnick (l) in the Nuclear Medicine Research Facility with NIH director Dr. Francis Collins (second from r). There, she was briefed on the latest advances in neuroimaging and the fight against Alzheimer's disease.

Long-time NIH grantee and 2009 Nobel Prize winner Dr. Carol Greider talks about the harmful effect automatic federal budget cuts will have on the next generation of biomedical scientists.

### **Below:**

Arizona resident Felicia Sanchez, who is participating in a research study here, tells her "miracle" recovery story—made possible, she noted, by doctors at NIH.

PHOTOS: ERNIE BRANSON

tial devastating effects of what Mikulski called "a meat-ax approach" to cutting funds across every agency. NIH, which she renamed the "National Institutes of Hope," would take a \$1.5 billion hit.

"We've got to stop the sequester—hands across the aisle, hands across the dome," she said.

### **Who Pays?**

NIH director Dr. Francis Collins, opening a press conference with Mikulski in the South Lobby of the Clinical Center, welcomed the discussion on "the importance of biomedical research and how it advances our knowledge about health and how to overcome disease, and how the NIH investment is a powerful economic engine in addition to an engine of discovery and how possible cuts from sequestration will have far-reaching negative effects on all of these things.

"When NIH funding is cut," he stressed, "it's felt not just here in Bethesda, but in every state around the country and even around the world...So who'll pay the price of this looming across-the-board cut? Ultimately patients and families who are counting on us to find those next promising cures and treatments."

### **Young Research Careers in Jeopardy**

Mikulski estimated a potentially disastrous financial impact on 15,000 Marylanders who either work at NIH or benefit from the research funding at other Maryland institutions such as Johns Hopkins University or the University of Maryland.

Backing that claim in person at the event was Nobel laureate Dr. Carol Greider, who offered

a view of sequestration from the perspective of an NIH-supported researcher.

Currently chair of molecular biology and genetics at JHU School of Medicine, Greider has been an NIH grantee for the past 23 years. She said the 15 faculty members of her department—"outstanding scientists who have made some of the fundamental discoveries in modern biology"—have also been funded by NIH for more than 20 years.

By far the hardest hit by the budget slash, however, will not be the senior scientists, Greider pointed out.

"The bulk of funds in my research branch goes to support young people who work in the lab—young people who I'm training to be the next generation of scientific leaders," she said. "Now I see the training of these bright young students as truly being in jeopardy if the NIH funding further declines.

"Given that my work on telomeres was really far outside the mainstream research, I'm not sure that in the current climate we have for research funding that I would have received funding to be able to do the work that led to the Nobel Prize...Break-throughs come from young scientists and this group is in jeopardy today...For the first time in all







of the years I have been chair of the department, we have a projected budget deficit...Even before talk of sequestration, things have been hard."

Collins confirmed that sequestration would mean that "hundreds of grants will not get paid" and training grants will be cut. Every institute and center will take a 5.1 percent cut in its funding.

"This is not a spigot that you turn off and then turn on again blithely. If we lose the talents of this up-and-coming generation with all of their dreams and vision, they're not coming back... Right now we have a hard time convincing people getting into this field that there's a career path for them. What biomedical research desperately needs is a stable trajectory. What we've had instead has been a rollercoaster of ups and downs, and mostly downs."

#### Patient Impact, 'All the Possibilities' in Peril

It was, however, the story of Felicia Sanchez, a 23-year-old Clinical Center patient from a small town in Arizona, that provided the most vivid visual of NIH's mission. Sanchez first came to NIH 3 years ago at age 21 after her doctors told her there was nothing more they could do for her severe infection with coccidioidomycosis, or Valley Fever. They could not diagnose the reason she could not clear her disseminated infection, and they forecast probable death from it in months or weeks.

"I thought to myself, 'What am I supposed to do—just go home and wait to die?' and my doctors said you go to NIH," recalled Sanchez, who said she was immediately fascinated by the enormous Clinical Center. "All the possibilities—that is what NIH gave me. NIH gave me medicines and treatments that insurance wouldn't cover, that hospitals back at home couldn't give me...Within a month they made me better."

Sanchez recovered well enough to go home and enjoy her life. Two years later, however, her neurosurgeon in Phoenix gave her another dire prediction. She'd soon be paralyzed from the waist


down and probably never be able to walk again—unless she had surgery.

Sanchez recalled his exact words: "He said, 'It would be a miracle to fix this,' and the only thing I could think was, 'I need to go to the NIH.' So I came to the NIH and I'm walking perfectly without the surgery...I don't know what I'd do without the doctors and research and scientists here. I wouldn't be here without them...I would just be a memory to family and friends, a young girl's life cut short because of the unknown."

#### Mikulski Has a Plan

In order to stop the drastic cuts for 2013, lawmakers and President Obama must come up with \$85 billion. Mikulski said she has a plan "that if it were passed today, we could all breathe easier tomorrow." She and several colleagues have developed what she called a "balanced approach" that features 50 percent in revenue ("implementing the 'Warren Buffett rule,' which requires millionaires to pay at least the same tax rate as their secretaries; and "plugging loopholes for sending jobs overseas") and 50 percent in strategic cuts (federal farm subsidies, and "Department of Defense, once troops have returned from the war").

As reporters asked whether the sequester would offer any flexibility about which specific programs take the greatest funding cuts, Mikulski likened the situation to the Titanic disaster:

"You're on a ship that's sinking. Flexibility is like asking which deck do you want to be on—all you can do is be on a different deck, but you're still heading down. What we need to do is not hit that iceberg." 

#### Above, from l:

NIAID director Dr. Anthony Fauci (l) and NCI director Dr. Harold Varmus greet Mikulski.

Clinical Center director Dr. John Gallin chats with the senior senator from Maryland after her remarks in the CC's South Lobby.

Visibly moved, Mikulski accepts a token of appreciation from Sanchez, who thanked the lawmaker for her strong support of NIH research and patients.

#### Below:

In the medical board room, Mikulski is welcomed by NHLBI director Dr. Gary Gibbons (l) and ORWH director Dr. Janine Austin Clayton, as Collins looks on.



## YOGA

CONTINUED FROM PAGE 1

who will be designing programs for seniors. We want to make sure these are tailored for healthy older adults who are likely to have less strength, range of motion and balance than younger adults.”

Using technology developed for sports medicine, Salem is investigating how older adults use their muscles and joints in certain yoga postures. Although his NCCAM-funded study was small (early phase 2), it yielded findings useful for both the clinician and physical therapist.

It will also help investigators like Salem develop a program for a randomized controlled trial.

A mind-body practice with origins in Indian philosophy, yoga comes in many forms. Yet although it’s touted as a “total solution exercise” that balances flexibility and strength, there’s actually very little data on its usefulness in healthy seniors, Salem said.

He focused on the type of yoga most widely practiced in the West: hatha yoga, with its gently flowing movements, breathing exercises and meditation. This ancient Eastern practice met Salem’s two Western specialties—kinesiology, the study of human movement, and biomechanics, a sub-discipline that applies principles of mechanics and engineering to analyze human motion.

“We tried to be true to yoga, which has a spiritual element, but we are just talking about the physical demands,” he said. “Before we can prescribe an intervention, we need to know the physical demands associated with it.”

None of the research volunteers had any prior exposure to yoga; all were medically screened. All were enrolled in a 32-week pre-post intervention study of two specified series of hatha yoga postures. The classes were delivered 2 days per week, 1 hour per session. The intervention consisted of two sets of postures, series I and series II, designed to be progressive (i.e., to advance in difficulty) and to train major muscle groups that are integral to conducting activities of daily living.

Then, at 16 and 32 weeks, with the help of an experienced yoga instructor, they were guided through a warm-up and each series of poses or asanas (AH-sun-as—typically named for natural elements and animals e.g., the Tree, the Cobra, the Dog) while fitted with instrumentation for motion analysis.



High-speed cameras on the room’s periphery captured movement data and sent it to a computer. There, technicians using unique modeling software created a virtual skeleton that is used to identify the forces, joint torques and muscle activations required to perform each pose.

All poses and movements were performed on force plates, which measure data during standing, stepping and so on, to quantify balance, gait and other parameters of biomechanics.

Of 22 subjects with an average age of 71 years, 20 completed the 32-week study. Highlights included:

- ❑ Muscular endurance in a step test improved 15 percent; in a heel rise (up on toes), improvement was 33 percent.
- ❑ In this group, yoga did not significantly improve balance.
- ❑ 68 percent of participants reported some type of pain following one or more of the yoga classes; shoulder pain was the most frequently reported problem. So that subjects could remain in the program, poses were modified; some modifications have distinct clinical applications.
- ❑ The study focused on static postures, but transitions are also important. The sequencing of the poses may thus be critical in reducing risk to older adults.

Salem’s vision for the future? To see yoga incorporated into physical therapy.

“You might only get 12 PT visits,” he said. “What’s the patient going to do then? We’d like

### Right:

*Salem hopes to see yoga incorporated into physical therapy. “You might only get 12 PT visits,” he said. “What’s the patient going to do then? We’d like to work with groups to develop safe and effective programs that people can transition into when they come out of PT.”*



to work with groups to develop safe and effective programs that people can transition into when they come out of PT.

“And why have we been slow to integrate CAM modalities into standard PT practice?” he continued. “CAM integrated with PT is not currently being reimbursed. Until we provide the evidence for that, it’s not going to be reimbursed.”

During Q&A, Stephanie Dailey of NIA asked: “Do you report any positive experiences, anecdotally?”

“We had self-report quality-of-life measures,” Salem said, “but we didn’t see any improvement. You know why? They were robust to begin with, so we had a ceiling effect. All of them reported that they loved it; there were times we had to ask people to take a day off because of soreness, but they would say, ‘No, please let me come in.’ So we would tailor the program specifically to their problem.”

Yoga is popular; a YouTube search for “yoga for beginners” yields over 3.5 million hits. But what you may find online, in DVDs or in popular magazines—slim young models, sometimes in extreme poses—may not be right for seniors.

For Salem’s safe and effective yoga prescription for older adults, the biomechanical considerations are the ones to watch.

The lecture is archived at <http://videocast.nih.gov/>. 

### NLM Spring Lecture Series Continues

The NLM spring lecture series continues Wednesday, Mar. 27, 3:30-6 p.m., in Lister Hill Auditorium, Bldg. 38A. Speakers will be Dr. Nancy Harrington, professor and associate dean for research, department of communication, College of Communication and Information, University of Kentucky; and Dr. Linda Neuhauser, clinical professor of community health and human development and co-principal investigator of health research for action, School of Public Health, University of California, Berkeley. The public is invited.

For the complete series schedule, visit [www.nlm.nih.gov/news/com\\_lecture\\_kreps.html](http://www.nlm.nih.gov/news/com_lecture_kreps.html).

### NIGMS Fills Two Scientific Slots



Two scientists recently joined NIGMS in key positions.

Dr. Alison Hall is deputy director of the Division of Training, Workforce Development and Diversity, which supports the institute’s research training, career development, diversity and capacity-building activities through a number of programs at the undergraduate, graduate, postdoctoral, faculty and institutional levels. She joins NIGMS from Case Western Reserve University School of Medicine. There, she was a professor in the department of neurosciences and associate dean of graduate education.

Hall earned a bachelor’s degree in biochemistry and cell biology from the University of California, San Diego, and a Ph.D. in developmental genetics and anatomy/neuroscience from Case Western Reserve University School of Medicine, where she also conducted postdoctoral research.



Dr. Darren Sledjeski is chief of the Genetic Mechanisms Branch in the Division of Genetics and Developmental Biology, where he also administers research grants in the areas of transcription mechanisms and symbiotic relationships and community ecology. He was formerly a challenge manager and scientific initiatives manager in the NIAID Office of Initiative Development. Prior to that, Sledjeski was a scientific review officer in the institute’s Office of Scientific Review.

Sledjeski came to NIH from the University of Toledo Medical Center, where he was first an assistant and later an associate professor in the department of microbiology and immunology. He earned a bachelor’s degree in biology from the College of William and Mary and a Ph.D. in microbiology from the University of Maryland. Sledjeski conducted postdoctoral research at NCI.

### Cooper To Direct CSR’s Division of Receipt and Referral



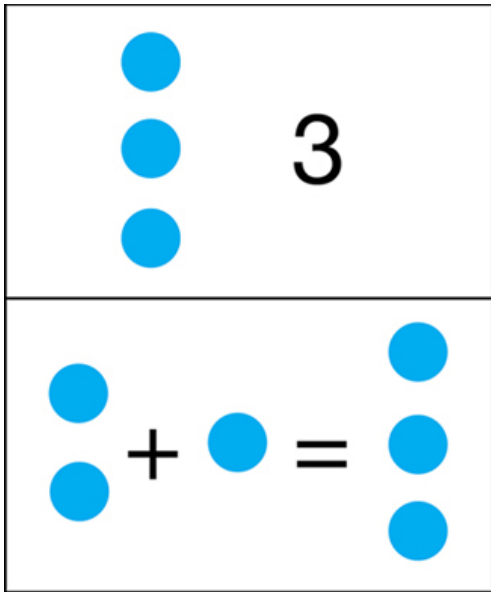
The Center for Scientific Review has named Dr. Cathleen Cooper as director of its Division of Receipt and Referral. She has served as acting director of DRR since September 2012, and previously served as a review group chief as well as a scientific review officer and a referral officer.

“Dr. Cooper is a proven manager with a profound appreciation of the NIH peer review and referral systems,” said CSR director Dr. Richard Nakamura. “She also has excelled in working with the scientific community in positive ways during difficult times.”

Cooper has been at CSR for 12 years. She earned a Ph.D. in pathology at the University of Southern California, where she studied naturally occurring delayed-type hypersensitivity reactions to mycobacteria. She did her postdoctoral training in molecular immunology at Columbia University then went to the University of Massachusetts Medical School as an assistant professor in the department of cell biology and the cancer center. There, she led a research team studying the molecular regulation of early events in hematopoietic development with special emphasis on B lymphocyte and neutrophil differentiation.

## First Grade Math Skills Set Foundation for Later Math Ability

Children who failed to acquire a basic math skill in first grade scored far behind their peers by seventh grade on a test of the mathematical abilities needed to function in adult life, according to researchers supported by NIH.



*Number system knowledge is the ability to relate a quantity to the numerical symbol that represents it and to manipulate quantities and make calculations. For example, the 3 dots shown can be represented by the numeral 3 and that 3 is made up of 2 and 1.*

The basic math skill, number system knowledge, is the ability to relate a quantity to the numerical symbol that represents it, and to manipulate quantities and make calculations. This skill is the basis for all other mathematics abilities, including those necessary for functioning as an adult member of society, a concept called numeracy.

The researchers reported that early efforts to help children overcome difficulty in acquiring number system knowledge could have significant long-term benefits. They noted that more than 20 percent of U.S. adults do not have the eighth grade math skills needed to function in the workplace.

“An early grasp of quantities and numbers appears to be the foundation on which we build more complex understandings of numbers and calculations,” said NICHD’s Dr. Kathy Mann Koepke. “Given the national priority on education in science, technology, engineering and math fields, it is crucial for us to understand how children become adept at math and what interventions can help those who struggle to build these skills.”

The study appeared online in *PLoS One*.

**Scientists Identify Molecular Events that Underlie FASD**

Scientists have identified a molecular signaling pathway that plays an important role in the development of fetal alcohol spectrum disorders (FASD). The new research in cells and mice, supported by the National Institute on Alcohol Abuse and Alcoholism, points to candidate

genes for FASD susceptibility and may open new avenues for developing drugs to prevent alcohol damage to the fetal brain. A report of the study appeared online in the *Proceedings of the National Academy of Sciences*.

“Prenatal alcohol exposure is the leading preventable cause of birth defects and developmental disorders in the United States,” said NIAAA acting director Kenneth Warren. “These new findings are yet another important contribution from researchers who have been at the forefront of scientific discovery in FASD.”

Warren noted that FASD can include the distinct pattern of facial features associated with fetal alcohol syndrome as well as intellectual disabilities, speech and language delays and poor social skills.

**NIH Study Shows Big Improvement in Diabetes Control**

More people are meeting recommended goals in the three key markers of diabetes control, according to a study conducted and funded by NIH and the Centers for Disease Control and Prevention.

The report, published online Feb. 15 in *Diabetes Care*, shows that, from 1988 to 2010, the number of people with diabetes able to meet or exceed all three of the measures that demonstrate good diabetes management rose from about 2 percent to about 19 percent. Each measure also showed substantial improvement, with over half of people meeting each individual goal in 2010.

The measures are A1C—which assesses blood sugar (glucose) over the previous 3 months—blood pressure and cholesterol. They are often called the ABCs of diabetes. When these measures fall outside healthy ranges, people are more likely to be burdened by complications of diabetes, including heart disease, stroke, kidney disease, blindness and amputation.

Despite improvement, the results show continued need for better diabetes control. In particular, young people and some minority groups were below average in meeting the goals.

Despite improvement, the results show continued need for better diabetes control. In particular, young people and some minority groups were below average in meeting the goals.



# milestones



Roz Gray (at right, and center, above) was feted at her recent retirement party by OLPA director Pat White (l) and NIAID director Dr. Anthony Fauci.

## OLPA's Gray Retires After More Than 3 Decades

Roz Gray, deputy director of the Office of Legislative Policy and Analysis for more than a decade, retired at the end of December 2012 after more than 30 years at NIH. She had also served as acting OLPA director for several extended periods.

A graduate of Virginia State University, Gray was a microbiologist by training. Prior to joining NIH, she worked as quality control manager for a subsidiary of the Reynolds Metals Co. in Richmond, group leader of analytical microbiology for Beecham Pharmaceuticals in Piscataway, N.J., and as a research chemist for Hoffmann-LaRoche Pharmaceuticals in Nutley, N.J.

Gray graduated from the NIH Management Intern Program then joined NIH's legislative office. She worked to educate Congress about the research conducted by NIH-supported scientists, focusing on such issues as HIV/AIDS, infectious diseases, vaccines and, more recently, pandemic influenza, biodefense, biosafety and diversity issues.

As an NIH legislative specialist at the beginning of the AIDS epidemic, she was a key player as NIH and the Public Health Service began to wrestle with this global threat. Gray also took pride in serving as a mentor to NIH interns, fellows and OLPA employees and has served on many NIH committees.

Gray's OLPA colleagues held a retirement party for her in Wilson Hall on Jan. 29. Paying tribute to her were NIH director Dr. Francis Collins, NIAID director Dr. Anthony Fauci, Office of AIDS Research director Dr. Jack Whitescarver and former Office of Research on Women's Health director Dr. Vivian Pinn. Moreover, Sen. Barbara Mikulski (D-MD) honored Gray in the *Congressional Record* for her many achievements in advancing the mission of NIH.

# volunteers

## Overweight Volunteers Needed

NICHD is looking for men and women ages 35-70 who are overweight and have abnormal glucose levels. After an initial screening visit for general health assessment, participants will undergo treatment with a cortisol-blocking medication (mifepristone) or a non-active pill (placebo) for 7 days. Each participant will take both study agents with a gap of 6 to 8 weeks between the two. Testing before and after treatment with the study medications will include blood drawing over 24 hours, urine collection, an oral and an intravenous glucose tolerance test and 1- to 2-day overnight inpatient stay. Compensation will be provided. For more information, call 1-800-411-1222 (TTY 1-866-411-1010) and refer to study 11-CH-0208.

## Are You Overweight and Diabetic?

Washington Center for Weight Management & Research, Arlington, Va., is conducting a 52-week non-medication research study to evaluate the effectiveness of a weight-loss program modified for use by people with type 2 diabetes. Qualified participants will attend several visits, receive weight management counseling, medical exams, lab work and weight monitoring.

To qualify, you must be between the ages of 18 and 70 years, have type 2 diabetes, be overweight, not have any significant illness (such as heart disease), not be taking any medications for weight loss and meet other criteria. For more information call (703) 807-0037 or email [info@wtmgmt.com](mailto:info@wtmgmt.com).

## Midlife & Menopause Research Studies

Women ages 40-65 who struggle with irritability, anxiety, sadness or loss of enjoyment at the time of the menopause transition are invited to participate in outpatient research studies. There is no cost for participation. Compensation may be provided. Phone (301) 496-9576 and refer to study 88-M-0131.

## Walport Discusses Managing Infectious Disease on a Global Scale

By Dana Steinberg

"Today we can use molecular research to understand transmission of infectious diseases geographically in ways not possible before," said Sir Mark Walport, a rheumatologist/immunologist. Director of the Wellcome Trust, one of the largest medical research charity foundations in the world, he will soon begin his post as chief scientific adviser to the U.K. government. He delivered the annual David Barmes Global Health Lecture, titled, "From John Snow to Genome Science," in Masur Auditorium recently.

While environmental factors such as temperature or rainfall can determine geographic distribution of disease, so can such challenges as poor infrastructure and unsafe drinking water.

"In this country, we expect the water we drink will have been effectively separated from the water that we excrete," said Walport. "Sadly, that is not true in many parts of the world."

It certainly wasn't so in mid-1800s London, where cholera outbreaks were claiming thousands of lives. At the time, a British anesthiologist named John Snow, considered the father of epidemiology, believed polluted water was the culprit. Through careful clinical observation, Snow determined many cases of cholera were clustered around a water pump. When he had the pump's handle removed, the outbreak stopped. It was indeed sewage-contaminated water causing the infections.

"Science is all about using the right tool for the right question," said Walport. One apparatus, the Bangkok bed—simply a bed with a hole in it and a bucket underneath—has been important in the history and management of cholera. It helps measure lost fluid so doctors can create replacement therapy from rehydration fluids to antibiotics.

Cholera remains a global health threat today, with 3 million to 5 million cases worldwide and more than 100,000 deaths annually, said Walport. Little was known about cholera in Snow's day. But today we can map its global transmission.

In an age of great mobility fueled by high-speed travel, Walport underscored understanding how infectious diseases move around the world, among individuals and populations. Southeast Asia has been a hotbed for cholera outbreaks since the early 19th century. In 2010, when UN



troops from Nepal arrived in Haiti following the earthquake, cholera appeared there for the first time in a century. The disease was transmitted through contaminated water that travelled from the UN camp down the river; within a few months, more than 300,000 Haitians were infected and thousands died.

Following a recent outbreak of MRSA (antibiotic-resistant staph) in a British hospital, repeated deep cleanings in the ward did not prevent additional outbreaks. A staff carrier was soon identified and then infections stopped. Sequencing analysis identified a novel, more pathogenic organism. Understanding the genotype, said Walport, allows us to learn more about the evolution of infection and can lead to new treatments.

Clinical researchers should seize new opportunities in science, said Walport, who underscored accurate phenotyping, genotyping and utilizing medical imaging and informatics.

"This, I think, is the start of the future of microbiology...We'll be able to use sequencing information to identify organisms in ways that weren't possible before," said Walport. "That sequencing will tell us more about the pathogenicity because we'll be able to identify virulence factors, antibiotic resistance as it evolves and, importantly, we're going to be able to investigate transmission of infections both at a global scale and at a local scale in ways that will actually alter clinical management."

A major challenge Walport cited is building capacity in the developing world to support scientists and assure adequate facilities for conducting research. Developing countries are plagued with poor infrastructure, poverty, poor education, malnutrition and bad policies, all challenges to improving their health systems. Diseases of inequality, such as childhood diarrhea, run rampant.

The Wellcome Trust supports capacity-building initiatives. Major malaria research programs are under way in Malawi, Kenya, South Africa and Southeast Asia. Walport said research on the drug artemisinin, used to treat severe malaria cases, has now become the global recommendation. But since drug resistance is emerging in Southeast Asia, it's important to find new treatments. Another global concern, and a lethal one, he said, is the counterfeiting of anti-malarial drugs.

"I think it's worth emphasizing that funding global health research is a collaborative activity," said Walport, who highlighted the need for public-private efforts. The Wellcome Trust's newest partnership with NIH is H3Africa, which seeks to understand disease susceptibility and drug responses in African populations.

"The fascination of genomics is how much it tells us about our own interrelationships, one to another, about family history and the very close relationships of human populations," said Walport. By bolstering research, fostering collaborations and improving access for all to innovations, technology and medicine, Walport said, we can move from global health to global sustainability.



On hand for Walport's (third from r) talk were (from l) NCI director Dr. Harold Varmus, NIAID director Dr. Anthony Fauci, NIH director Dr. Francis Collins, NIDCR director Dr. Martha Somerman and FIC director Dr. Roger Glass. The Barmes Lecture was presented by Fogarty International Center and NIDCR.

PHOTOS: ERNIE BRANSON